

**IN THE CLAIMS**

1. (Currently Amended) An intervertebral disc system comprising:  
at least one annulus augmentation ~~material~~ device; and  
at least one nuclear augmentation ~~device~~ material;  
wherein the annulus augmentation device is configured to resist migration within the disc region bounded by the annulus and vertebral body endplates without depending on the nuclear augmentation material, and wherein the annulus augmentation device is independent of the ~~nucleus~~ nuclear augmentation material;  
wherein said nuclear augmentation material comprises a fluid that is incapable of changing phase in situ.
2. (Previously Presented) The system of Claim 1, wherein said annulus augmentation device prevents the extrusion of materials from within the space normally occupied by the nucleus pulposus and inner annulus fibrosus.
3. (Previously Presented) The system of Claim 1, wherein said annulus augmentation device is a barrier.
4. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material restores diminished disc height and pressure.
5. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material induces the growth or formation of material within the nuclear space.
6. (Previously Presented) The system of Claim 1, wherein said annulus augmentation device is removable.
7. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material is removable.
8. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material comprises a pharmacologically active agent.
9. (Withdrawn) The system of Claim 1, wherein said nuclear augmentation material is selected from the group consisting of: liquids, gels, solids, and gases.
10. (Withdrawn) The system of Claim 1, wherein said nuclear augmentation material is capable of changing phase.

11. (Currently amended) The system of Claim 1, wherein said ~~nuclear augmentation material comprises a liquid and wherein said liquid comprises a fluid~~ is selected from the group consisting of one or more of the following: steroids, antibiotics, tissue necrosis factors, tissue necrosis factor antagonists, analgesics, growth factors, genes, gene vectors, hyaluronic acid, non-crosslinked collagen, fibrin, liquid fat, oils, synthetic polymers, polyethylene glycol, liquid silicones, synthetic oils, and saline.

12. (Withdrawn) The system of Claim 1, wherein at least a portion of said nuclear augmentation material changes phase from a liquid to a gel.

13. (Withdrawn) The system of Claim 12, wherein said gel is selected from the group consisting of one or more of the following: acrylonitriles, acrylic acids, polyacrylimides, acrylimides, acrylimidines, polyacrylonitriles, and polyvinylalcohols.

14. (Withdrawn) The system of Claim 1, wherein at least a portion of said nuclear augmentation material changes phase from a liquid to a solid.

15. (Withdrawn) The system of Claim 14, wherein said solid is in powder form.

16. (Withdrawn) The system of Claim 14, wherein said solid is selected from the group consisting of one or more of the following: resorbable material, polyurethane, polyester, PEEK, PET, FEP, PTFE, ePTFE, PMMA, nylon, carbon fiber, DELRIN (acetal), polyvinyl alcohol gels, polyglycolic acid, polyethylene glycol; silicone gel, silicone rubber, vulcanized rubber, gas filled vesicles, bone, hydroxy appetite, cross-linked collagen, muscle tissue, fat, cellulose, keratin, cartilage, protein polymers, transplanted nucleus pulposus, bioengineered nucleus pulposus, transplanted annulus fibrosus and bioengineered annulus fibrosus.

17. (Withdrawn) The system of Claim 12, wherein at least a portion of said gel is impregnated or coated with one or more biologically active compounds.

18. (Withdrawn) The system of Claim 17, wherein said biologically active compound is selected from the group consisting of one or more of the following: drug carriers, genetic vectors, naked genes, therapeutic agents, growth renewal agents, growth inhibitory agents, analgesics, anti-infectious agents, and anti-inflammatory drugs.

19. (Withdrawn) The system of Claim 14, wherein at least a portion of said solid is impregnated or coated with at least one biologically active compound.

20. (Withdrawn) The system of Claim 19, wherein said biologically active compound is selected from the group consisting of one or more of the following: drug carriers, genetic

vectors, naked genes, therapeutic agents, growth renewal agents, growth inhibitory agents, analgesics, anti-infectious agents, and anti-inflammatory drugs.

21. (Currently amended) A method of repairing or rehabilitating an intervertebral disc by augmentation comprising:

inserting at least one annulus augmentation device wherein said at least one annulus augmentation device is configured to resist migration within the disc region bounded by the annulus and vertebral body endplates without depending on the nuclear augmentation material; and

inserting at least one nuclear augmentation material, wherein said at least one nuclear augmentation material is independent of said annulus augmentation device; wherein said nuclear augmentation material comprises a fluid that is incapable of changing phase in the disc environment.

22. (Previously Presented) The method of Claim 21, wherein said nuclear augmentation material conforms to healthy regions of the annulus while said annulus augmentation device shields weaker regions of the annulus.

23. (Withdrawn) An intervertebral disc system comprising:

an annulus augmentation device; and

a nucleus augmentation material;

wherein said annulus augmentation device encapsulates only a portion of said nucleus augmentation material and wherein said nucleus augmentation material is capable of changing phase within an intervertebral disc space.

24. (Withdrawn) The system of Claim 23, wherein said annulus augmentation device prevents the extrusion of materials from within the space normally occupied by the nucleus pulposus and inner annulus fibrosus.

25. (Withdrawn) The system of Claim 23, wherein said annulus augmentation device is a barrier.

26. (Withdrawn) The system of Claim 23, wherein said nuclear augmentation material restores diminished disc height and pressure.

27. (Withdrawn) The system of Claim 23, wherein said nuclear augmentation material induces the growth or formation of material within the nuclear space.

28. (Withdrawn) The system of Claim 23, wherein said annulus augmentation device is removable.

29. (Withdrawn) The system of Claim 23, wherein said nuclear augmentation material is removable.

30. (Withdrawn) The system of Claim 23, wherein said nuclear augmentation material comprises a pharmacologically active agent.

31. (Withdrawn) The system of Claim 23, wherein said nuclear augmentation material is selected from the group consisting of: liquids, gels, solids, and gases.

32. (Withdrawn) The system of Claim 23, wherein said nuclear augmentation material is capable of changing phase.

33. (Withdrawn) The system of Claim 31, wherein at least a portion of said nuclear augmentation material is a liquid and wherein said liquid comprises a fluid nuclear augmentation material selected from the group consisting of: steroids, antibiotics, tissue necrosis factors, tissue necrosis factor antagonists, analgesics, growth factors, genes, gene vectors, hyaluronic acid, non-crosslinked collagen, fibrin, liquid fat, oils, synthetic polymers, polyethylene glycol, liquid silicones, synthetic oils, and saline.

34. (Withdrawn) The system of Claim 31, wherein said nuclear augmentation material comprises a gel and wherein said gel is a hydrogel.

35. (Withdrawn) The system of Claim 34, wherein said hydrogel is selected from the group consisting of: acrylonitriles, acrylic acids, polyacrylimides, acrylimides, acrylimidines, polyacrylonitriles, and polyvinylalcohols.

36. (Withdrawn) The system of Claim 31, wherein said nuclear augmentation material comprises a solid and wherein said solid is cube-like, spheroid, disc-like, ellipsoid, rhombohedral, cylindrical, or amorphous.

37. (Withdrawn) The system of Claim 31, wherein said nuclear augmentation material comprises a solid and wherein said solid is in powder form.

38. (Withdrawn) The system of Claim 31, wherein said nuclear augmentation material comprises a solid and wherein said solid is selected from the group consisting of: titanium, stainless steels, nitinol, cobalt, chrome, resorbable material, polyurethane, polyester, PEEK, PET, FEP, PTFE, ePTFE, PMMA, nylon, carbon fiber, DELRIN (acetal), polyvinyl alcohol gels, polyglycolic acid, polyethylene glycol, silicone gel, silicone rubber, vulcanized rubber, gas filled

vesicles, bone, hydroxy appetite, cross-linked collagen, muscle tissue; fat, cellulose, keratin, cartilage, protein polymers, transplanted nucleus pulposus, bioengineered nucleus pulposus, transplanted anulus fibrosus and bioengineered anulus fibrosus.

39. (Withdrawn) The system of Claim 31, wherein said nuclear augmentation material comprises a gel and wherein said gel is impregnated or coated with one or more biologically active compounds.

40. (Withdrawn) The system of Claim 39, wherein said biologically active compound is selected from the group consisting of: drug carriers, genetic vectors, naked genes, therapeutic agents, growth renewal agents, growth inhibitory agents, analgesics, anti-infectious agents, and anti-inflammatory drugs.

41. (Withdrawn) The system of Claim 31, wherein said nuclear augmentation material comprises a solid and wherein said solid is impregnated or coated with at least one biologically active compound.

42. (Withdrawn) The system of Claim 41, wherein said biologically active compound is selected from the group consisting of: drug carriers, genetic vectors, naked genes, therapeutic agents, growth renewal agents, growth inhibitory agents, analgesics, anti-infectious agents, and anti-inflammatory drugs.

43. (Currently amended) ~~The intervertebral disc system of Claim 1,~~ An intervertebral disc system comprising:

at least one anulus augmentation material, wherein the anulus augmentation device comprises a bio-compatible support member.

at least one nuclear augmentation device; wherein the anulus augmentation device is configured to resist migration within the disc region bounded by the anulus and vertebral body endplates without depending on the nuclear augmentation material, and wherein the anulus augmentation device is independent of the nucleus material.

44. (Currently amended) The intervertebral disc system of Claim 1, ~~wherein the anulus augmentation device is anchored to adjacent tissue.~~ furthering comprising at least one anchor, wherein said at least one anchor is coupled to at least a portion of the anulus augmentation device.

45. (Previously Presented) The intervertebral disc system of Claim 1, wherein the anulus augmentation device comprises a barrier.

46. (Previously Presented) The intervertebral disc system of Claim 1, wherein the annulus augmentation device has a cylindrical cross-section.

47. (Previously Presented) The intervertebral disc system of Claim 1, wherein the annulus augmentation device is configured to present a concavity facing the nucleus in the implanted orientation.

48. (Withdrawn) The intervertebral disc system of Claim 23, wherein the annulus augmentation device comprises a bio-compatible support member.

49. (Withdrawn) The intervertebral disc system of Claim 23, wherein the annulus augmentation device is anchored to adjacent tissue.

50. (Withdrawn) The intervertebral disc system of Claim 23, wherein the annulus augmentation device comprises a barrier.

51. (Withdrawn) The intervertebral disc system of Claim 23, wherein the annulus augmentation device has a cylindrical cross-section.

52. (Withdrawn) The intervertebral disc system of Claim 23, wherein the annulus augmentation device is configured to present a concavity facing the nucleus in the implanted orientation.

53. (Withdrawn) The intervertebral disc system of Claim 23, wherein the annulus augmentation device and nucleus augmentation material are independent.

54. (Withdrawn) The intervertebral disc system of Claim 23, wherein at least a portion of the annulus augmentation device and at least a portion of the nucleus augmentation material are coupled.

55. (Withdrawn) The system of Claim 14, wherein said solid is cube-like, spheroid, disc-like, ellipsoid, rhombohedral, cylindrical, or amorphous.

56. (Withdrawn) An intervertebral disc system comprising:

a nucleus augmentation material, wherein said nucleus augmentation material comprises a liquid and wherein at least a portion of said nucleus augmentation material is capable of changing phase within an intervertebral disc space; and

an annulus augmentation device, wherein the annulus augmentation device is independent of the nucleus augmentation material and wherein the annulus augmentation

device is configured to resist migration within the disc region bounded by the annulus and vertebral body endplates without depending on the nuclear augmentation material.

57. (Withdrawn) An intervertebral disc system comprising:

a nucleus augmentation material, wherein at least a portion of said nucleus augmentation material is in a first infusion state and wherein at least a portion of said nucleus augmentation material is capable of changing phase at body temperature from said first infusion state to a second state; and

an annulus augmentation device, wherein at least a portion of the annulus augmentation device is independent of the nucleus augmentation material and wherein the annulus augmentation device is configured to resist migration within the disc region bounded by the annulus and vertebral body endplates without depending on the nuclear augmentation material.

58. (Withdrawn) The intervertebral disc system of Claim 57, wherein said first infusion state is a fluid state.

59. (Withdrawn) The intervertebral disc system of Claim 57, wherein said second state is a hardened state.

60. (Withdrawn) The intervertebral disc system of Claim 57, wherein said second state is a gel or a solid state.

61. (Withdrawn) The intervertebral disc system of Claim 57, further comprising an additive operable to transform said first infusion state to said second state, wherein said additive is selected from the group consisting of one or more of the following: a curing agent, a thickening agent, and a polymerization initiator.

62. (New) The intervertebral disc system of Claim 1, wherein at least a portion of said fluid is absorbable.

63. (New) An intervertebral disc system comprising:

at least one annulus augmentation device;

at least one nucleus augmentation material;

wherein said annulus augmentation device is configured to resist migration within the disc region bounded by the annulus and vertebral body endplates without depending on the nucleus augmentation material; and

Application No.: 10/055,504

Filed: October 25, 2001

wherein said nuclear augmentation material comprises a fluid, wherein said fluid is in a liquid state during insertion into the disc and wherein said fluid remains as a liquid while in the disc environment.

H:\DOCS\SAM\SAM-5294.DOC  
021005